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Cymer, Inc.  
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EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT PAPER NUMBER

2828

DATE MAILED: 04/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n No.

09/854,097

Applicant(s)

CYMER, INC.

Examiner

Davienne Monbleau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Paul IP*  
PAUL IP  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The IDS filed on 1/8/02 has been acknowledged and a signed copy of the PTO-1449 is attached herein.

### ***Claim Objections***

Regarding Claim 1 part E), the phrase “pulse energy energy wavelength and bandwidth of energy pulses” either needs a comma between “energy energy”, or one “energy” needs to be deleted.

Regarding Claim 12, the word – said – should be inserted before the phrase “heat exchanger system.”

Regarding Claim 13, the words – water cooled – should be inserted before the phrase “heat exchangers”.

Regarding Claim 14, “ comprise” in line 2 should be changed to – comprises –.

Regarding Claim 15, the word – electrical – should be inserted before the phrase “components”.

Regarding Claim 36, the phrase “comprising a nitrogen comprising a purge module comprising flow monitors said laser” needs to be corrected.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 1, the phrases "capable of" and "configure to" are vague and do not provide a positive limitation. Also in part B, the phrase "when operating..." is an intended use and does not provide a positive limitation.

Claim 7 recites the limitation "said aluminum stock" in 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "said finned heat exchanger system" in 1. There is insufficient antecedent basis for this limitation in the claim.

Regarding Claim 25, the phrase "configure to" is vague and does provide a positive limitation.

Regarding Claim 39, the phrase "configure to" is vague and does provide a positive limitation.

Regarding Claim 43, the phrase "configured so that" is vague and does provide a positive limitation.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

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provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 3, 5, 6 and 10-21 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 11 and 16-27 of U.S. Patent No. 6,477,193. Although the conflicting claims are not identical, they are not patentably distinct from each other because determining whether a seal has broken is known in the art.

Regarding Claims 1 and 6, see '193 Claim 1.

Regarding Claim 3, see '193 Claim 11.

Regarding Claim 5, see '193 Claim 2.

Regarding Claims 10-21, see '193 Claims 16-27 respectively.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5, 10-31, and 41, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morton et al. (U.S. Patent No. 5,771,258) in view of Borneis et al. (U.S. Patent No. 6,243,405). Morton et al. teach in Figure 3 a gas discharge laser system comprising a laser chamber, two electrodes, a discharge region (112), a gas flow path, a tangential fan (138), a heat exchanger (154), and a pulse power system (which is not shown). Morton et al. do not teach a laser beam measurement and control system. Borneis et al. teach in Figure 1 and in column 7 lines 13-36 a beam measurement and control system (18). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a beam measurement and control system in Morton et al., as taught by Borneis et al., to see if the wavelength and/or bandwidth need adjusting.

Regarding Claim 2, determining the optimum value of the downstream cross section involves routine skill in the art.

Regarding Claim 3, Morton et al. teach in Figure 3 a vane structure (301) upstream of said discharge region (112).

Regarding Claims 5 and 14, Morton et al. teach in column 5 lines 1-3 that said heat exchanger is water-cooled. Since water is a known coolant in the art, it would have been obvious to one of ordinary skill in the art to apply this technique to other components of the system.

Regarding Claim 10, Morton et al. teach in column 5 lines 1-3 that said heat exchanger (154) has radial fins and is water-cooled.

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Regarding Claim 11, this is duplication of parts for a more efficient cooling system.

Regarding Claims 12 and 13, determining the precise configuration of the heat exchanger system involves routine skill in the art for optimizing the cooling of the laser.

Regarding Claims 15 and 16, it is inherent that a gas discharge laser will have a high voltage source to provide enough power and that it will be grounded. See discussion on Claim 14.

Regarding Claims 17-20, resonant charging systems are known in the laser art to provide continuous pulses to the discharge electrodes. Bleed circuits and De-Qing circuits are common components.

Regarding Claim 21, it is inherent that pulse power systems comprise a charging system and power supplies.

Regarding Claims 22-26, Borneis teach in column 7 lines 12-35 the beam measurement and control system which comprises an etalon and an energy monitor. The information, once detected, is sent to the processor (16) for analysis. The function of this system is the same as that of the claimed invention and produces the same overall result.

Regarding Claim 27, Borneis et al. teach in columns 5-6 a line-narrowing module (10) comprising a tuning mirror. PZTs are known in the art to adjust optical elements for tuning.

Regarding Claim 28, stepper motors are known in the art to adjust optical elements for tuning.

Regarding Claim 29, Borneis et al. teach pretuning means within said line-narrowing unit.

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Regarding Claims 30 and 31, the diagnostic module is the active tuning means with algorithms to determine the necessary adjustments.

Regarding Claim 41, Borneis et al. teach in Figure 1 a first beam splitter (22) and further teaches in column 7 lines 8-10 that a second beam splitter may be used to direct the other input beam to various detectors.

Claims 4 and 6-8, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morton et al. (U.S. Patent No. 5,771,258) in view of Borneis et al. (U.S. Patent No. 6,243,405), as applied to Claim 1 above, and further in view of Sarkar et al. (U.S. Patent No. 5,848,089). Regarding Claim 4, Morton et al. do not teach a brushless DC motor and a shaft. Sarkar et al. teach in Figure 5 a fan for a gas discharge laser comprising a shaft (130) driven by a brushless DC motor. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the fan structure in Morton et al., as taught by Sarkar et al., to have a more powerful fan motor to increase the pulse repetition rate. (See Sarkar et al. column 2 lines 6-13).

Regarding Claim 6, Sarkar et al. teach in column 2 lines 42-67 that said brushless DC motor comprises stators and rotors, as well as magnetic radial bearings.

Regarding Claim 7, Sarkar et al. teach in column 3 lines 27-32 that said fan comprises a blade structure made out of aluminum.

Regarding Claim 8, Sarkar et al. teach in column 3 lines 25-30 that said outside diameter of the fan may be 3.75 inches but that it is not limited to that diameter. Therefore, one of ordinary skill in the art would be able to determine the optimum diameter for the particular system.



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Claims 32-36, 42 and 43, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morton et al. (U.S. Patent No. 5,771,258) in view of Borneis et al. (U.S. Patent No. 6,243,405), as applied to Claims 1 and 41 above, and further in view of Voss (U.S. Patent No. 6,529,533). Regarding Claims 32, 42 and 43, Borneis et al. teach in column 5 lines 57-67 that said line-narrowing module comprises a diffraction grating, but Morton et al. do not teach purging means. Voss teaches in column 3 lines 45-50 purging to cleanse the system. It would have been obvious to one of ordinary skill in the art at the time of the invention to use purging means in Morton et al., as taught by Voss, to keep the beam path relatively free of water and oxygen, which absorb the beam. (See Voss column 1 lines 55-65).

Regarding Claim 33, Voss teaches in column 3 lines 45-50 that said purge gas is nitrogen.

Regarding Claim 34, Voss teaches in column 3 lines 45-50 that said purge gas is helium.

Regarding Claim 35, Voss teaches in column 3 lines 45-50 nitrogen purging means.

Regarding Claim 36, Voss teaches in column 3 lines 45-67 nitrogen purging means with purge exhaust tubes (3).

Claims 37, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morton et al. (U.S. Patent No. 5,771,258) in view of Borneis et al. (U.S. Patent No. 6,243,405), as applied to Claim 1 above, and further in view of Baumler et al. (U.S. Patent No. 6,493,364). Morton et al. do not teach a beam shutter and a power meter. Baumler et al. teach in Claim 10 an excimer laser comprising a beam shutter and a power meter. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the beam shutter and power meter in Morton et al., as taught by Baumler et al., because it is light tight and has a high power handling capability.

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Claims 38-40, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morton et al. (U.S. Patent No. 5,771,258) in view of Borneis et al. (U.S. Patent No. 6,243,405), as applied to Claim 1 above, and further in view of Govorkov (U.S. Patent No. 6,219,368). Morton et al. do not teach a beam sealing system. Govorkov teaches in Figure 2 a beam sealing system comprising bellows (8) at opposite ends of the resonant cavity between the discharge tube/chamber and the end windows/optics. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the beam sealing system in Morton et al., as taught by Govorkov, to purify the laser tube.

Regarding Claim 39, Govorkov teaches in Figure 2 that said first and second beam seals provide easy replacement of said laser chamber.

Regarding Claim 40, Govorkov teaches beam train isolation from atmospheric gases, vibration resistant, and easy module replacement.

Claim 9, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morton et al. (U.S. Patent No. 5,771,258) in view of Borneis et al. (U.S. Patent No. 6,243,405) and Sarkar et al. (U.S. Patent No. 5,848,089), Claims 4 and 6-8, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morton et al. (U.S. Patent No. 5,771,258) in view of Borneis et al. (U.S. Patent No. 6,243,405), as applied to Claim 4 above, and further in view of Boisvert et al. (U.S. Patent No. 6,404,158). Morton et al. do not teach a sensorless motor. Boisvert et al. teach in column 3 lines 20-25 sensorless motors for a drive motor. Even though this art is in different field, it is addressing the same problem area...alignment of motor shafts. Therefore, it would have been obvious to one of

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ordinary skill in the art at the time of the invention to use the sensorless motors in Morton et al., as taught by Boisvert et al., to improve position and accuracy.

*Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: 5,835,520; 5,770,933; 5,083,093.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Davienne Monbleau*

DNM  
April 7, 2003

*Paul Ip*  
PAUL IP

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